

KENNEDY SPACE CENTER
APOLLO PROGRAM DIRECTIVE

DATE: March 8, 1967

KSC APOLLO PROGRAM DIRECTIVE NO. 9

TO: Distribution

FROM

[Signature]
APOLLO PROGRAM MANAGER

SUBJECT: Apollo/Saturn Pressurized Systems and Associated GSE Fluid
Compatibility Requirements

REFERENCE: Apollo Program Directive 23 (TM047-001-1A)
dated December 6, 1966

1. PURPOSE

This Directive established the KSC requirement to insure that all fluids (gas and liquid) used with Apollo/Saturn pressurized systems and associated GSE are compatible over the specification range of both the fluids and container materials under expected use conditions.

2. SCOPE

This Directive is applicable to all Apollo/Saturn pressurized systems in the spacecraft modules, launch vehicle stages, associated GSE and test and launch facilities for which KSC is the development center and/or is operationally responsible.

The KSC organizations involved in the implementation of this directive are:

Director of Design Engineering (MA)
Director of Technical Support (NA)
Director of Launch Operations (HA)
Director of Quality Assurance (EA)
Director of Installation Support (RA)

3. RESPONSIBILITIES

a. General

(1) Prior to the initial use of a given fluid in a given Apollo/Saturn system, line, tank, container, pressure vessel, or GSE related to the space vehicle, the systems and/or documentation shall be thoroughly researched to ensure the fluid and system hardware compatibility in accordance with the appropriate design specification. This can be accomplished by conducting specimen tests, chemical analysis, or review of historical chemical analyses, or combination of the above.

(2) If specimen testing is required, such tests must be sufficient in number and scope to insure compatibility over the specification range of both the fluids and the hardware material under expected use conditions. If the hardware will be subjected to several different fluids during the course of fabrication, cleaning and testing, the specimen tests must establish that all fluids used are compatible with the hardware material in the sense that all reaction products formed which may be harmful to the operational system can be removed during the final cleaning process, and in addition, that any reaction between the fluid and the hardware material will not degrade the expected operational capability, reliability, or safety of the system.

b. Specific

(1) The Director of Design Engineering shall be responsible for the following:

(a) Insuring system hardware/fluid compatibility per paragraph 3a for the procured hardware until such time that the hardware responsibility has been transferred from the Design Engineering Directorate to an operating Directorate.

(b) Maintaining a history of testing and fluid exposure for each system under his design cognizance. This history shall be delivered to the responsible operational agency, in accordance with MA 5320.5 "Data Transfer Policy & Proc." (to be released 4/1/67), prior to the system turnover to the agency with the life limits of critical components in accordance with the "Apollo Reliability and Quality Assurance Plan" NHB5300.1A.

(c) Developing procedures or plans to implement this directive.

(d) Providing status to the Apollo Program Manager on any unusual conditions or abnormal test results discovered during implementation of this directive.

(2) The Director of Technical Support shall be responsible for the following:

(a) Insuring system hardware/fluid compatibility has been maintained per paragraph 3.a for the applicable hardware while under his operational cognizance.

(b) Insuring system hardware/fluid compatibility for applicable hardware that has been given to the NA Directorate for maintenance, cleaning, or other similar purposes.

(c) Maintaining a history of testing and fluid exposure for the hardware under his operational cognizance. This history shall be delivered to the user in accordance with an NA procedure to be released 4/15/67, prior to the hardware delivery to the user.

(d) Developing procedures or plans to implement this directive.

(e) Providing status to the Apollo Program Manager on any unusual conditions or abnormal test results discovered during implementation of this directive.

(3) The Director of Launch Operations shall be responsible for the following:

(a) Insuring system hardware/fluid compatibility has been maintained per paragraph 3.a for the applicable hardware while under his operational cognizance.

(b) Insuring that the fluids used at KSC on/in given hardware under his operational cognizance are in accordance with the specifications of the NASA Center that developed the hardware (Vehicle or GSE). Hardware transferred to the NA Directorate for maintenance, cleaning or other similar purposes shall be accompanied by the specifications and/or documentation that are required for the NA directorate to fulfill the obligations detailed in paragraphs (2) (b) above.

(c) Maintaining a log of testing and fluid exposure for the hardware under his operational cognizance.

(d) Developing procedures or plans to implement this directive.

(e) Providing status to the Apollo Program Manager on any unusual conditions or abnormal test results discovered during implementation of this directive.

(4) The Director of Quality Assurance shall be responsible for the following:

(a) Insuring that the procedures utilized by those Directors required to fulfill the obligations of this directive conform with existing KSC Quality Assurance and Reliability Policy.

(b) Establishing new Center policy as required to ensure the fulfillment of this directive.

(5) The Director of Installation Support shall be responsible for the following:

(a) Insuring that the procedures and operations utilized by those Directors required to fulfill the obligations of this directive conform with existing safety standards and policies.

4. EFFECTIVE DATE

This Directive is effective immediately.

5. The Apollo Program Manager will monitor the implementation of this directive for compliance with the Apollo requirements. All plans and procedures established by other directorates will be reviewed for adequacy. Copies of all procedures developed to comply with this directive are to be forwarded to the Apollo Program Manager (DA).

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